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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/775,660

02/09/2004

Xiaohe Chen

200300677-1

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09/08/2006

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EXAMINER

SHOSHO, CALLIE E

ART UNIT

PAPER NUMBER

1714

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/775,660

Applicant(s)

CHEN ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. All outstanding rejections except for those described below are overcome by applicants' amendment filed 6/15/06.

In light of the new grounds of rejection set forth below with respect to claims 10-12, the following action is non-final.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-3, 5-10, 13-14, and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Valentini et al. '730 (U.S. 2005/0020730) taken in view of the evidence given in Valentini et al. '629 (U.S. 2003/0184629) and Ma et al. (U.S. 5,085,698).

The rejection is adequately set forth in paragraph 4 of the office action mailed 2/13/06 and is incorporated here by reference.

Further, with respect to claim 10, it is noted that Valentini et al. '730 disclose the use of organic solvent (paragraph 40) and for disclosure of specific types of solvent refers to Ma et al. which discloses the use of solvent including pyrrolidone and 1,3-dimethyl-2-imidazolidonone (col.9, lines 10-11).

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valentini et al. '730 in view of Iu et al. (U.S. 6,102,998).

The disclosure with respect to Valentini et al. '730 in paragraph 3 above is incorporated here by reference.

The difference between Valentini et al. '730 and the present claimed invention is the requirement in the claims of specific solvent.

Iu et al., which is drawn to ink jet ink, disclose the use of hydantoin solvent identical to that presently claimed in order to produce ink with enhanced image quality, waterfastness, and dry time (col.4, lines41-65 and col.9, lines 20-24).

In light of the motivation for using hydantoin solvent disclosed by Iu et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such hydantoin solvent in the ink of Valentini et al. '730 in order to produce ink with enhanced image quality, waterfastness, and dry time, and thereby arrive at the claimed invention.

6. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valentini et al. '730 in view of Elwakil (U.S. 5,833,743).

The rejection is adequately set forth in paragraph 7 of the office action mailed 2/13/06 and is incorporated here by reference.

7. Claims 1-10, 13-16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nichols et al. (U.S. H2113 H).

The rejection is adequately set forth in paragraph 9 of the office action mailed 2/13/06 and is incorporated here by reference.

8. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nichols et al. as applied to claims 1-10, 13-16, and 18-20 above, and further in view of Iu et al. (U.S. 6,102,998).

The difference between Nichols et al. and the present claimed invention is the requirement in the claims of specific solvent.

Iu et al., which is drawn to ink jet ink, disclose the use of hydantoin solvent identical to that presently claimed in order to produce ink with enhanced image quality, waterfastness, and dry time (col.4, lines 41-65 and col.9, lines 20-24).

In light of the motivation for using hydantoin solvent disclosed by Iu et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such hydantoin solvent in the ink of Nichols et al. in order to produce ink with enhanced image quality, waterfastness, and dry time, and thereby arrive at the claimed invention.

9. Claims 1-10 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirasa et al. (U.S. 2002/0019458) in view of Hayashi (U.S. 6,500,248).

The rejection is adequately set forth in paragraph 10 of the office action mailed 2/13/06 and is incorporated here by reference.

10. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirasa et al. in view of Hayashi as applied to claims 1-10 and 17-20 above, and further in view of Iu et al. (U.S. 6,102,998).

The difference between Hirasa et al. in view of Hayashi and the present claimed invention is the requirement in the claims of specific solvent.

Iu et al., which is drawn to ink jet ink, disclose the use of hydantoin solvent identical to that presently claimed in order to produce ink with enhanced image quality, waterfastness, and dry time (col.4, lines 41-65 and col.9, lines 20-24).

In light of the motivation for using hydantoin solvent disclosed by Iu et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such hydantoin solvent in the ink of Hirasa et al. in order to produce ink with enhanced image quality, waterfastness, and dry time, and thereby arrive at the claimed invention.

11. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirasa et al. in view of Hayashi as applied to claims 1-10 and 17-20 above, and further in view of Ma et al. (U.S. 5,648,405).

The rejection is adequately set forth in paragraph 11 of the office action mailed 2/13/06 and is incorporated here by reference.

12. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirasa et al. in view of Hayashi as applied to claims 1-10 and 17-20 above, and further in view of Elwakil (U.S. 5,833,743).

The rejection is adequately set forth in paragraph 12 of the office action mailed 2/13/06 and is incorporated here by reference.

Response to Arguments

13. Applicants' arguments regarding Chen et al. (U.S. 6,908,185) have been considered but they are moot in view of the discontinuation of the use of this reference against the present claims.

14. Applicants' arguments filed 6/15/06 have been fully considered but, with the exception of arguments relating to Chen et al., they are not persuasive.

Specifically, applicants argue that Valentini et al. '730 is not a relevant reference against the present claims given that there is no disclosure in Valentini et al. '730 of water-soluble polyurethane as required in the present claims. Rather, applicants argue that Valentini et al. '730 teaches away from the presently claimed invention given that Valentini et al. '730 disclose the use of water-insoluble polyurethane dispersion.

However, while it is agreed that Valentini et al. '730 disclose the use of polyurethane dispersion, firstly, it is noted that Valentini et al. '730 do not refer to the polyurethane as water-insoluble. Further, while there is no explicit disclosure that the polyurethane is water-soluble, given that the polyurethane of Valentini et al. '730 possesses acid number of 10-100 and

possesses hydrophilic functionality and given that acid number is a measure of the acid functionality or number of free acid groups, it is clear that the polyurethane is inherently water-soluble due to the presence of the acid groups. Given that the polyurethane of Valentini et al. '730 possesses hydrophilic functionality as well as acid number that completely overlaps that presently claimed, it is the examiner's position that the polyurethane of Valentini et al. '730 does have some degree of water-solubility. While the polyurethane is not completely water-soluble, it is noted that there is no requirement in the present claims that the polyurethane is completely water-soluble or dissolves in water. The present claims only broadly require water-soluble polyurethane. It is noted that page 4, lines 9-11 of the present specification discloses that polyurethane is considered "water-soluble" if it has water-solubility limit at 25 °C of at least 0.1%, preferably at least 5%, especially at least 10%. Given that Valentini et al. '730 disclose polyurethane containing hydrophilic functionality as well as acid number that completely overlaps that presently claimed, it is clear that the polyurethane is water-soluble as required in the present claims.

Applicants argue that Nichols et al. is not a relevant reference against the present claims given that there is no disclosure in Nichols et al. of water-soluble polyurethane as required in all the present claims. Rather, applicants argue that Nichols et al. teach away from the present invention given that Nichols et al. disclose the use of polyurethane resin emulsion.

However, given that the polyurethane of Nichols et al. possesses acid number of 5-70 and given that acid number is a measure of the acid functionality or number of free acid groups, it is clear that the polyurethane is inherently water-soluble due to the presence of the acid groups.

Further, given that the polyurethane of Nichols et al. possesses acid number that completely overlaps that presently claimed, it is the examiner's position that the polyurethane of Nichols et al. does have some degree of water-solubility. While the polyurethane is not completely water-soluble, it is noted that there is no requirement in the present claims that the polyurethane is completely water-soluble or dissolves in water. The present claims only broadly require water-soluble polyurethane. It is noted that page 4, lines 9-11 of the present specification discloses that polyurethane is considered "water-soluble" if it has water-solubility limit at 25 C of at least 0.1%, preferably at least 5%, especially at least 10%. Further, it is noted that Nichols et al. disclose that the polyurethane is obtained from polyol, polyisocyanate, and 2,2-hydroxymethyl-substituted carboxylic acid such as 2,2-bis(hydroxymethyl)propionic acid (col.7, lines 30-43) which is identical to polyurethane utilized in the present invention.

Thus, given that Nichols et al. disclose polyurethane possessing acid number as presently claimed that is obtained from same ingredients as the polyurethane of the present invention, it is the examiner's position that the polyurethane of Nichols et al. is water-soluble as required in the present claims.

Applicants argue that there is no motivation to combine Hirasa et al. with Hayashi. Applicants argue that Hayashi does not teach that adding a 1,2-alkyldiol to any ink would provide the described beneficial results but rather teaches that inclusion of 4-5 specific ingredients including 1,2-alkyldiol provides the beneficial properties. Applicants also argue that one of ordinary skill in the art would not be motivated to pick out 1,2- alkyldiol from the list of

4-5 ingredients and add it to the entirely different ink of Hirasu et al. and would not expect the ink of Hirasu et al. to exhibit the same beneficial properties as disclosed by Hayashi.

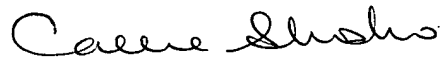
However, firstly, it is noted that Hayashi explicitly discloses that it is the 1,2-alkyldiol itself not combination of ingredients that improves the color development of the ink and prevents feathering (col.3, lines 56-60). Further, while there is no explicit disclosure that such 1,2-alkyldiol would exhibit the same beneficial effects in any ink, the courts have held that “the motivation to combine can arise from the knowledge that the prior art elements will perform their expected functions to achieve their expected results when combined for their common purpose”, *Miles Lab, Inc. v. Shandon Inc.* 997 F.2d at 878, 27 USPQ 2d 1123, 1128 (Fed.Cir. 1993). Based on the teachings of Hayashi, one of ordinary skill in the art would have recognized that 1,2-alkyldiol functions so as to improve color development and prevent feathering in ink and would have expected such 1,2-alkyldiol to function as such in other inks.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1714

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
9/2/06